REMARKS

Reconsideration of the application is requested in view of the amendments above and the remarks below. Claims 21-30 were cancelled and new Claims 31-39 were added. In view of the modifications above, the remarks below refer to new Claims 31-39.

Objections

The Office Action objected to the Abstract because it was not on a separate page. Enclosed is the Abstract on a separate page and the objection is believed overcome.

Rejection of Claims 21-30 Under 35 USC 112

The Office Action rejected Claims 21-30 under 35 USC 112, second paragraph, on the grounds that a recited phrase "hydrolysis-sensitive fungicidal active compounds" was redundant. In view of the modifications above, the rejection is believed overcome. Reconsideration is requested.

Rejection of Claims 11-20 Under 35 USC 102

The Office Action rejected Claims 21-30 under 35 USC 102 over U.S. Pat. No. 5,248,450 (Metzner) or U.S. Pat. No. 5,990,143 (Ludwig). The rejection should be withdrawn in view of the amendments above and the remarks below.

A. *Rejection Under 35 USC 102 Over Metzner*

In view of the modifications above, the literal teachings of Metzner do not disclose every element of Applicants' invention. It is well settled that in order for a prior art reference to anticipate claim, the reference must disclose each and every element of claim with sufficient clarity to prove its existence in prior art. The disclosure requirement under 35 USC 102 presupposes knowledge of one skilled in art of claimed invention, but such presumed knowledge does not grant license to read into prior art reference teachings that are not there. See *Motorola Inc. v. Interdigital Technology Corp.* 43 USPQ2d 1481 (1997 CAFC). It is also well settled that when a claimed invention is not identically disclosed in a cited reference under 35 U.S.C. 102, but instead requires the skilled artisan to pick and choose among a number of different options disclosed by the reference, then the reference does not anticipate

the claimed invention (See *Mendenhall v. Astec Industries*, Inc. 13 USPQ2d 1913, 1928 (Tenn, 1988) *affd,* 13 USPQ2d 1956 (Fed. Cir. 1989).

Applicants' invention relates to an aqueous system comprising: (A) a component selected from the group consisting of hydrolysis-sensitive fungicidal active compounds, hydrolysis-sensitive bactericidal active compounds, hydrolysis-sensitive insecticidal active compounds, and mixtures thereof, in which the active compounds have a functional group N-S-CCl_2X, wherein X represents halogen, a C_1-C_4 alkyl, or a halogen-substituted C_1-C_4 alkyl, and (B) one or more binders having a pH that is less than or equal to 7. The binders are selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions. In one embodiment, Applicants' invention relates to a method for stabilizing a component of hydrolysis-sensitive active compounds in an aqueous system. In another embodiment, Applicants' invention relates to a method for protecting an aqueous system against microbial infestation. In another embodiment, Applicants' invention relates to a binder including a component selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions and having a pH $\leq$ 7 and particular hydrolysis-sensitive active compounds.

In order so that the USPTO may better appreciate their invention, Applicants offer the following comments. It is known in the art that active compounds containing an N-S bond are sensitive to nucleophilic reactions. As a result of this sensitivity, these compounds are known to be unstable in water at alkaline pH levels. Accordingly, it is a known problem that compounds having a functional N-$SCCl_2X$ group could not be used in water-based, ready to use wood preservation system. Applicants' invention is based on the surprising discovery that such sensitive compounds can be stabilized in aqueous systems by using specific binders.

It is also known in the art that there are two types of alkyd resin and acrylate binders which are soluble in water: (i) anionically modified binders and (ii) cationically modified binders. Anionically modified binders contain chemically bonded carboxylic groups which can be converted into water soluble salts by addition of bases (amines). Therefore these binders have an alkaline pH value.

The other type of water soluble binders, which are encompassed by Applicants' invention, are cationically modified because they contain chemically bonded amino groups which can be converted into the water soluble salts by addition of organic or inorganic acids. These binders have an acidic pH value of 7 or less. Applicants enclose a copy of RÖMPP Lexikon, Lacke und Druckfarben, S. 624-625, Georg Thieme Verlag 1998, together with a translation of the relevant portions, which gives an overview on the nature of both types of the water soluble alkyd resins and acrylate binders.

As stated in the specification (page 2, line 18) the binders which are employed according to the invention are commercially available. The binder which is used according to Examples 1 and 2 of the specification are both products sold by IDSM under the trade names URADIL® AZ 504 and URADIL® AZ 516. Both products belong to the cationic type of binders. An essential feature of the present invention is that these specific binders, which are neutral or acidic and which have a cationic structure, are employed to stabilize the active compounds. With this understanding of the invention, Applicants now discuss Metzner and explain why Metzner does not anticipate Applicants' invention.

Metzner discloses an agent or concentrate for the preservation of wood and wood materials which comprises a triazole fungicide of a specific formula, a pyrethroid insecticide and at least one constituent selected from the group consisting of a solvent, diluent, organic chemical binder, fixing agent, plasticizer, processing aid, dye, pigment, dye mixture and pigment mixture. At Column 4, lines 59 to 67, Metzner discloses that a certain amount of the triazole compounds may be replaced by the same quantity of another fungicide which may be, among other things, the sulfenamide dichlofluanid. Examples 1, 2 and 3 of Metzner disclose combinations of a specific triazole compound, the pyrethroid cyfluthrin, the sulfenamide dichlofluanid and an alkyd resin binder.

Metzner does not disclose each and every element of Claims 31-39 with sufficient clarity to prove that Applicants' invention existed in the prior art. Metzner's

agent or concentrate containing a triazole fungicide of a specific formula, a pyrethroid insecticide does not disclose Applicants' aqueous system comprising the above-mentioned hydrolysis-sensitive active compounds having a functional group N-S-CCl_2X. Since the hydrolysis-sensitive fungicidal, bactericidal and/or insecticidal active compounds, which are employed according to the present invention, contain a functional group N-S-CCl_2X, they are sulfenamides and do not belong to the types of azoles or pyrethroids. Similarly, Metzner's teachings for using its agent or concentrate containing a triazole fungicide of a specific formula, a pyrethroid insecticide does not disclose Applicants' method for stabilizing a component of hydrolysis-sensitive active compounds in an aqueous system or Applicants' method for protecting an aqueous system against microbial infestation. And Metzner's disclosures do not disclose Applicants' binder that includes a component selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions and having a pH $\leq$ 7 and particular hydrolysis-sensitive active compounds.

Even if the compound dichlofluanid contains a NS group, Metzner discloses this compound being used in formulations containing organic solvents, not aqueous systems. Examples 1-3, for instance, which show dichlofluanid being used, disclose dichlofluanid being used with aromatic and aliphatic hydrocarbons. It is noteworthy that Examples 1, 2 and 3 of Metzner do not disclose what type of alkyd resin was employed. Metzner's disclosure of dichlofluanid in combination with organic solvents is consistent with Applicants explanation above that it was known that active compounds containing an N-S bond are sensitive to nucleophilic reactions and that as a result of this sensitivity these compounds were known to be unstable in water at alkaline pH levels. As such, Metzner does not disclose anywhere an aqueous system containing a combination of a hydrolysis-sensitive compound containing a N-S-CCl_2X group and an alkyd resin or acrylate binder having a pH value of 7 or less. Reconsideration is requested.

Further, it is noteworthy that Metzner presents literally hundreds of possible combinations containing numerous possible active ingredients. With such a large

possible number of choices, one of ordinary skill in the art would have had to pick and choose from an enormous number of possibilities and would not possess Applicants' invention. Reconsideration is requested.

B. *Rejection Under 35 USC 102 Over Ludwig*

Ludwig also does not anticipate Applicants' invention. Ludwig discloses water-based solvent and emulsifier-free microbicidal active compound formulations based on azole fungicides and at least one quaternary ammonium fungicide of a specific formula. Ludwig discloses a composition that is prepared by combining at least one azole fungicide in the form of the free base and at least one quaternary ammonium fungicide (See Col. 2, ll. 16-67). The weight ratio of azole fungicide to quaternary ammonium fungicide is preferably 1:99 to 99:1 (Col. 3, ll. 23-24). Ludwig teaches that to prepare aqueous formulations, the active compounds are incorporated individually or as an active compound combination, such as in the form of powders, granules, pastes or concentrated solutions, suspensions or emulsions, into water by simple mixing, and are then present in the form of an aqueous suspension, solution or emulsion (Col. 3, ll. 26-31).

Such teachings do not anticipate Applicants' invention encompassed by new Claims 31-39. Ludwig disclosing a composition that is prepared by combining at least one azole fungicide in the form of the free base and at least one quaternary ammonium fungicide does not anticipate Applicants' aqueous systems or the other embodiments encompassed by new Claims 31-39. Similarly, Ludwig teaching that the weight ratio of azole fungicide to quaternary ammonium fungicide is preferably 1:99 to 99:1 or that to prepare its aqueous formulations, the active compounds are incorporated individually or as an active compound combination into water by simple mixing does not disclose Applicants' invention. Even if Ludwig discloses fluorfolpet as a possible active ingredient, it discloses such an active ingredient as one of many "mixing partners" at Column 5, lines 55+ such that one of ordinary skill in the art would have had to pick and choose from many possibilities and would not possess Applicants' invention.

It is noteworthy that Ludwig discloses that many other compounds binders as synthetic resins or acrylic resins can be added to the formulations. Further among a lot of other specific mixing partners sulfenamides (as dichlofluanid) are mentioned. There is no disclosure of the specific combination of the presently claimed combination of hydrolysis-sensitive compounds and the specific alkyd resin and/or acrylate dispersion binders. As can be seen from examples 1 to 4, Ludwig discloses only combinations of specific quaternary ammonium fungicides with tebuconazole. The literal teachings of Ludwig simply do not disclose every element of the claimed invention in as complete detail as is contained in Claims 31-39. Reconsideration is requested.

Rejection of Claims 21-30 Under 35 USC 103

The Office Action rejected Claims 21-30 under 35 USC 103 over Metzner or Ludwig. In view of the amendments above, the remarks below are directed to new Claims 31-39.

A. Rejection Under 35 USC 103 over Metzner

The rejection under Metzner should be withdrawn because one of ordinary skill in the art following the teachings of Metzner would not have been motivated to use the specific combination of binders with the aforementioned active compounds and expect the results Applicants' have obtained.

It is well-established that in a sense, virtually all inventions are combinations of old elements (*In re Rouffet*, 47 USPQ2d 1453, 1457), and that the USPTO may often find every element of a claimed invention in the prior art. *In re Rouffet*, 47 USPQ2d 1457. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. *In re Rouffet* at 1457. It is also well established that to establish a *prima facie* case of obviousness, the USPTO must satisfy all of the following requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification must have had a

reasonable expectation of success, as determined from the vantage point of one of ordinary skill in the art at the time the invention was made. *Amgen v. Chugai Pharmaceutical Co.* 18 USPQ 2d 1016, 1023 (Fed Cir, 1991), *cert. denied* 502 U.S. 856 (1991). Third, the prior art reference or combination of references must teach or suggest all of the limitations of the claims. *In re Wilson*, 165 USPQ 494, 496, (CCPA 1970).

In view of the modifications above, the rejection does not establish a *prima facie* case of obviousness. Applicants' invention relates to an aqueous system comprising: (A) hydrolysis-sensitive active compounds having a functional group N-S-CCl_2X and (B) one or more binders having a pH that is less than or equal to 7. The binders are selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions. In one embodiment, Applicants' invention relates to a method for stabilizing a component of hydrolysis-sensitive active compounds in an aqueous system. In another embodiment, Applicants' invention relates to a method for protecting an aqueous system against microbial infestation. In another embodiment, Applicants' invention relates to a binder including a component selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions and having a pH $\leq$ 7 and particular hydrolysis-sensitive active compounds.

As mentioned above, Applicants' invention is based on the surprising discovery that active hyrolysis-sensitive compounds can be stabilized in aqueous systems by using specific binders. Examples of preferred binders include alkyd/maleic anhydride copolymers, alkyd/modified linseed oil, alkyd resins, alkyd resin/soya oil, and linseed oil in combination with an acrylate dispersion (Spec., p. 2, ll. 14-16). Applicants' aqueous systems preferably contain from about 0.001 to 90 percent by weight of an active compound and from 3 to 80 percent by weight of binder (Spec., p.2, ll. 21-25). Preferred examples of water-based systems include water-based paints, e.g., emulsion paints and antifouling paints, as well as wood preservatives such as wood preservative varnishes and primers (Spec., p. 2, ll. 27-29). Applicants' aqueous systems are advantageous over known systems in that the

active compounds are stable for long periods against hydrolysis and decomposition, both in an acidic and in a neutral medium (Spec., p. 3, ll. 7-9).

Metzner's triazole fungicides, pyrethroid insecticides, solvents, diluents, organic chemical binders, fixing agents, plasticizers, processing aids, dyes, pigments, dye mixtures and pigment mixtures would not have made one of ordinary skill in the art following Metzner to modify Metzner and make an aqueous system comprising the hydrolysis-sensitive active compounds, and one or more binders having a pH $\leq$ 7 that are selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions. Metzner's teachings would not have been suggestive of the other embodiments encompassed by Applicants' invention.

Similarly, Metzner's teaching a certain amount of the triazole compounds may be replaced by the same quantity of another fungicide, which may be sulfenamide dichlofluanid, would not have made one of ordinary skill in the art following Metzner to modify Metzner and make Applicants' invention. Metzner teaches numerous possible combinations and does not have teachings that would have made one of ordinary skill in the art following the teachings of Metzner to selectively modify Metzner and arrive at Applicants' invention. Metzner lacks the suggestive details required by 35 USC 103. Accordingly, Applicants request that the USPTO acknowledge the differences between their invention and Metzner, withdraw the rejection, and acknowledge that Claims 31-39 comply with 35 USC 103.

B. Rejection Under 35 USC 103 over Ludwig.

The rejection under Ludwig also falls by similar reasoning. Ludwig discloses waterbased solvent and emulsifier-free microbicidal active compound formulations based on azole fungicides and at least one quaternary ammonium fungicide of a specific formula. Ludwig discloses a composition that is prepared by combining at least one azole fungicide in the form of the free base and at least one quaternary ammonium fungicide (See Col. 2, ll. 16-67). The weight ratio of azole fungicide to quaternary ammonium fungicide is preferably 1:99 to 99:1 (Col. 3, ll. 23-24). Ludwig teaches that to prepare aqueous formulations, the active compounds are incorporated individually or as an active compound combination, such as in the form of

powders, granules, pastes or concentrated solutions, suspensions or emulsions, into water by simple mixing, and are then present in the form of an aqueous suspension, solution or emulsion (Col. 3, ll. 26-31).

One of ordinary skill in the art following the teachings of Ludwig would have prepared a composition by combining at least one azole fungicide in the form of the free base and at least one quaternary ammonium fungicide and would not have arrived at Applicants' aqueous system or the other embodiments encompassed by new Claims 31-39. Similarly, the other teachings of Ludwig would have motivated one of ordinary skill in the art following the teachings of Ludwig to modify Ludwig, make inventions that are *different* from Applicants' invention encompassed by Claims 31-39. Ludwig teaches numerous compounds such that one of ordinary skill in the art would have had to pick and choose from many possibilities and would not have information that would have led the artisan to Applicants invention and expect the results Applicants have obtained.

In view of the foregoing amendments and remarks, allowance of Claims 31-39 is earnestly requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Cancel Claims 21-30 and add new Claims 31-39:

--31. An aqueous system comprising:

(A) a component selected from the group consisting of hydrolysis-sensitive fungicidal active compounds, hydrolysis-sensitive bactericidal active compounds, hydrolysis-sensitive insecticidal active compounds, and mixtures thereof, wherein the active compounds have a functional group N-S-CCl_2X, wherein X represents halogen, a C_1-C_4 alkyl, or a halogen-substituted C_1-C_4 alkyl, and

(B) one or more binders having a pH $\leq$ 7 selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions.

32. An aqueous system according to Claim 31, wherein the binder has a pH $\leq$ 5.

33. An aqueous system according to Claim 31, wherein the binder has a pH $\leq$ 3.

34. An aqueous system according to Claim 31, wherein the active compounds are selected from the group consisting of folpet, captan, captafol, dichlofluanid, tolylfluanid, fluorfolpet, and mixtures thereof.

35. A method for stabilizing a component selected from the group consisting of hydrolysis-sensitive fungicidal active compounds, hydrolysis-sensitive bactericidal active compounds, hydrolysis-sensitive insecticidal active compounds, and mixtures thereof, wherein the active compounds have a functional group N-S-CCl_2X, wherein X represents halogen, C_1-C_4 alkyl, or halogen-substituted C_1-C_4 alkyl,in an aqueous system,

the process comprising incorporating into the aqueous system one or more binders having a pH $\leq$ 7 and selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions, and thereby stabilizing the component.

36. A method according to Claim 35, wherein the binder has a pH $\leq$ 5.

37. A method for protecting an aqueous system against microbial infestation comprising incorporating into the aqueous system

(A) a component selected from the group consisting of hydrolysis-sensitive fungicidal active compounds, hydrolysis-sensitive fungicidal active compounds, hydrolysis-sensitive bactericidal active compounds, hydrolysis-sensitive insecticidal active compounds, and mixtures thereof, wherein the active compounds have a functional group N-S-CCl_2X, wherein X represents halogen, a C_1-C_4 alkyl, or a halogen-substituted C_1-C_4 alkyl, and

(B) one or more binders having a pH $\leq$ 7 and selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions, and thereby stabilizing the system.

38. A method according to Claim 37, wherein the binder has a pH $\leq$ 5.

39. A binder comprising:

(A) a component selected from the group consisting of (i) alkyd resins based on vegetable oils and (ii) acrylate dispersions and having a pH $\leq$ 7 and

(B) a component selected from the group consisting of hydrolysis-sensitive fungicidal active compounds, hydrolysis-sensitive fungicidal active compounds, hydrolysis-sensitive bactericidal active compounds, hydrolysis-sensitive insecticidal active compounds, and mixtures thereof, wherein the active compounds have a functional group N-S-CCl_2X, wherein X represents halogen, a C_1-C_4 alkyl, or a halogen-substituted C_1-C_4 alkyl.--

IN THE ABSTRACT:

An abstract is enclosed herewith on a separate page.

WATER BASED FORMULATIONS WITH FUNGICIDAL ACTION

ABSTRACT OF THE DISCLOSURE

The invention relates to storage-stable aqueous formulations containing at least one hydrolysis-sensitive active compound in combination with binders comprising an alkyd resin based on vegetable oils and/or acrylate dispersions and having a pH $\leq$ 7.